Agricultural Marketing Service SJ CN12
Cotton Division
Standards and Testing Branch
Testing Section
Fiber and Spinning Laboratory
Physical Science Aid, GS-1311-4

## I. INTRODUCTION

This position is located in the Fiber and Testing Laboratory, Clemson, South Carolina, where fiber, spinning, weaving and chemical finishing tests are made on cotton from all cotton growing sections of the United States and from foreign countries. The major functions of the laboratory are the testing of cotton fibers and yarns; the manufacture of small samples of cotton into yarn, cord, and fabric; the chemical finishing of cotton and cotton products; the quality evaluation of cotton through results from these tests; and to suggest practical applications of the findings to cotton breeders, textile men and others for practical use.

The incumbent performs fiber tests and other related testing functions in the fiber laboratory.

## II. DUTIES AND RESPONSIBILITIES

Based on a detailed knowledge of the testing methods and techniques required for the various tests, the incumbent independently conducts fiber tests and performs other related testing functions within the laboratory, including arithmetic calculations of the results obtained. Each specialized test is performed in accordance with highly standardized and detailed procedures which have been prepared in the Standards and Testing Branch. These procedures are revised as new and better methods are developed.

The performance of these duties requires a general understanding of the mechanisms and principles of operation of complicated instruments and machines used in cotton fiber testing and skill in the calibration and operation of such instruments and machines. There is also required the exercise of independent judgment in selecting pinches of cotton at random from laboratory samples, blending these samples, and extracting test specimens so that the specimens are representative of the laboratory samples. A high degree of skill is required in preparing samples for testing involving manual dexterity in manipulating, combing and parallelizing the fibers, in placing the specimens of fibers in the testing instruments, in operating the testing instruments, and in weighing minute specimens on micro-balances in a consistent manner. It is highly important that fibers are not damaged or broken, that fibers are not inadvertently discarded, that fibers are not allowed to pick up moisture from contact with the hands at certain stages of testing, that the instruments are accurately read, and that the specimens are accurately weighed because the results

are dependent on both the instrument readings and the weight of the specimens. All procedures of testing as well as the identification and handling of samples and the recording of test results must be performed in a very systematic manner.

In some cases, these duties require the interpretation of graphic curves and arithmetic calculations to obtain the test results reported. Such calculations are made either mechanically on calculating machines or graphically on special nomographs prepared for this purpose.

The incumbent performs the following tests:

1. Identifies and labels samples, giving careful attention to details to insure they are not mixed or crossed, and stores them when the tests are completed.

2. Extracts pinches of cotton and blends them for use as test specimens.

3. Checks, adjusts, balances, and calibrates test instruments and balances.

4. Conducts fiber length tests by the array method.

5. Conducts fiber length tests by the modified array method.

6. Conducts fiber length tests by the Fibrograph method.

7. Conducts fiber strength tests by the flat bundle method at both 0 and 1/8-inch gauge.

8. Conducts fiber tests of fineness and maturity in combination by the Micronaire method.

9. Conducts fiber fineness and maturity tests by the Causticaire method.

10. Makes calculations to obtain the results reported.

11. Assists in checking for accuracy and in tabulating the results to be reported.

12. As required, assists in training new employees in the techniques and methods of conducting tests or certain phases of tests.

The proper performance of these duties requires a thorough knowledge of the testing techniques and instruments used in the tests performed. It also required patience, careful and methodical attention to details, manual dexterity, and teamwork to insure accurate results and obtain maximum production of tests performed.

III. JOB CONTROLS

A. Responsibility for the Work of Others: None

B. Supervision and Guidance Received : The employee is under the general supervision of the Supervisory Physical Science Aid. Specific tests or functions are assigned, but they are conducted independently except for unusual cases. Advice and assistance are available and are given when requested or when the supervisor detects the need for such assistance. These tests or functions are conducted in accordance with standard procedures which are available for the use and guidance of all Aids. Two or more Aids are required to check within reasonable tolerances in these functions or tests in which the personal element effects the results obtained and two or more observations are made on each sample to obtain reliable results. The work and the results obtained are spot checked by the supervisor for compliance with prescribed testing techniques and methods.